MITSUBISHI ELECTRIC
Changes for the Better

for a greener tomorrow eco Changes

Mitsubishi Electric Energy-saving Data Collection Server EcoWebServer Ⅲ

Simple - Convenient - Compact
Realizing Energy Visualization and Demand Management

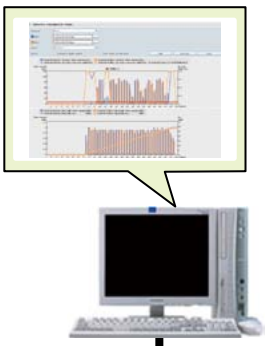
EcoWebServer Ⅲ

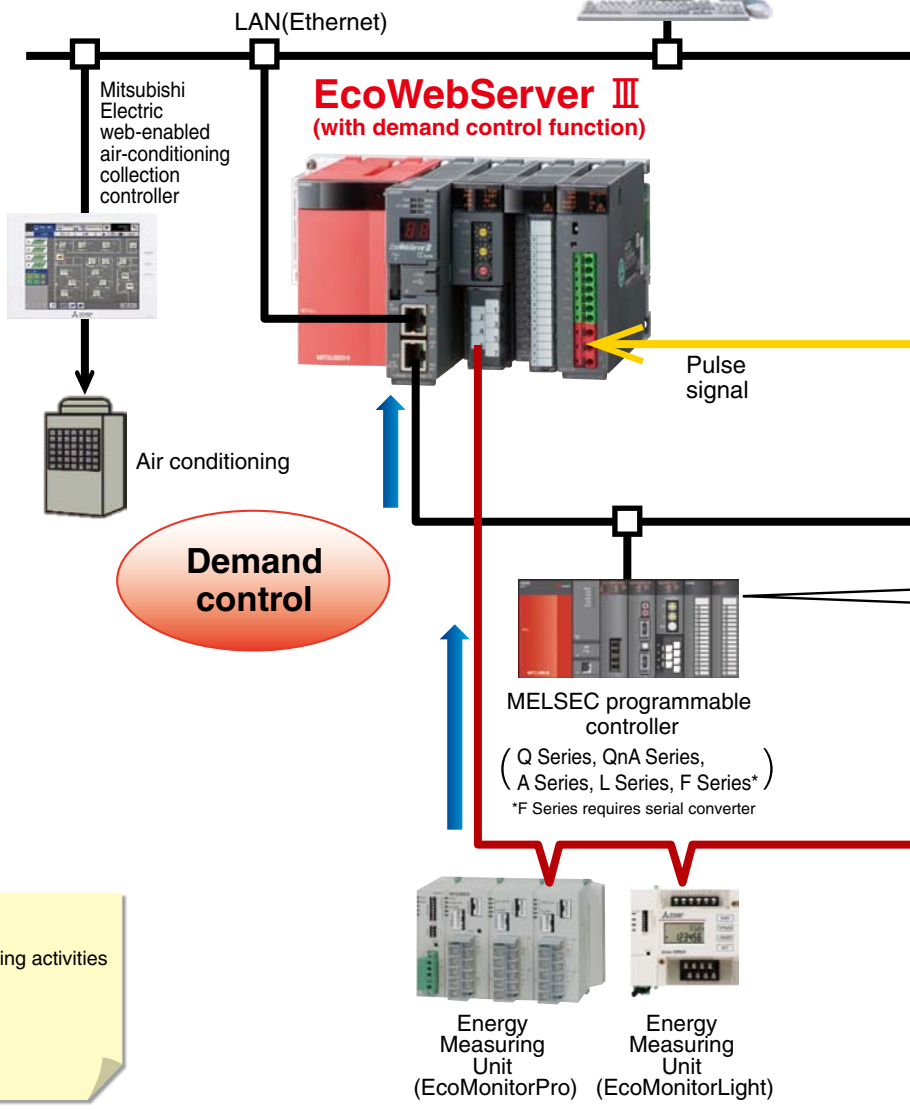
System Configuration Example

Mitsubishi Electric Energy Management System

Mitsubishi Electric Energy-saving Data Collection Server EcoWebServer Ⅲ

Support factory, building and school energy-saving activities.
Build visualized environments and manage energy effectively.
Support to energy conditions at all times and quickly resolve energy loss problems.
Finaly reduce energy loss, increase productivity and cut production costs.





Energy-saving method

Plan — Comparatively high specific consumption (waste of energy, negative influence on productivity)
Ex) △kWh of electricity per day can be saved with improvement.

Do
- Facilities start-up too fast
- After investigation and deciding appropriate start-up time, implement countermeasure

Check — Compare data before and after implementing countermeasure (△kWh reduced per day)

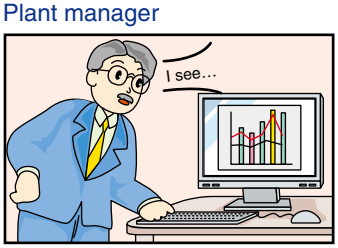
Action — Implement similar countermeasures for other facilities

Support energy-saving activities using "Visible Management"

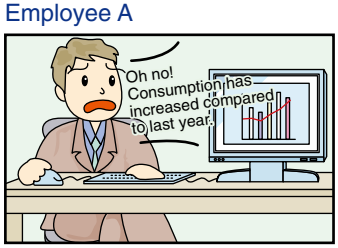
1. Monitor/Manage energy by department
2. Specific consumption-based management of energy-saving activities
3. Monthly/Annual target-based management
4. Monitor equipment operating status
5. Manage/Record energy data

Entire factory

Plant manager



Employee A



Employee B

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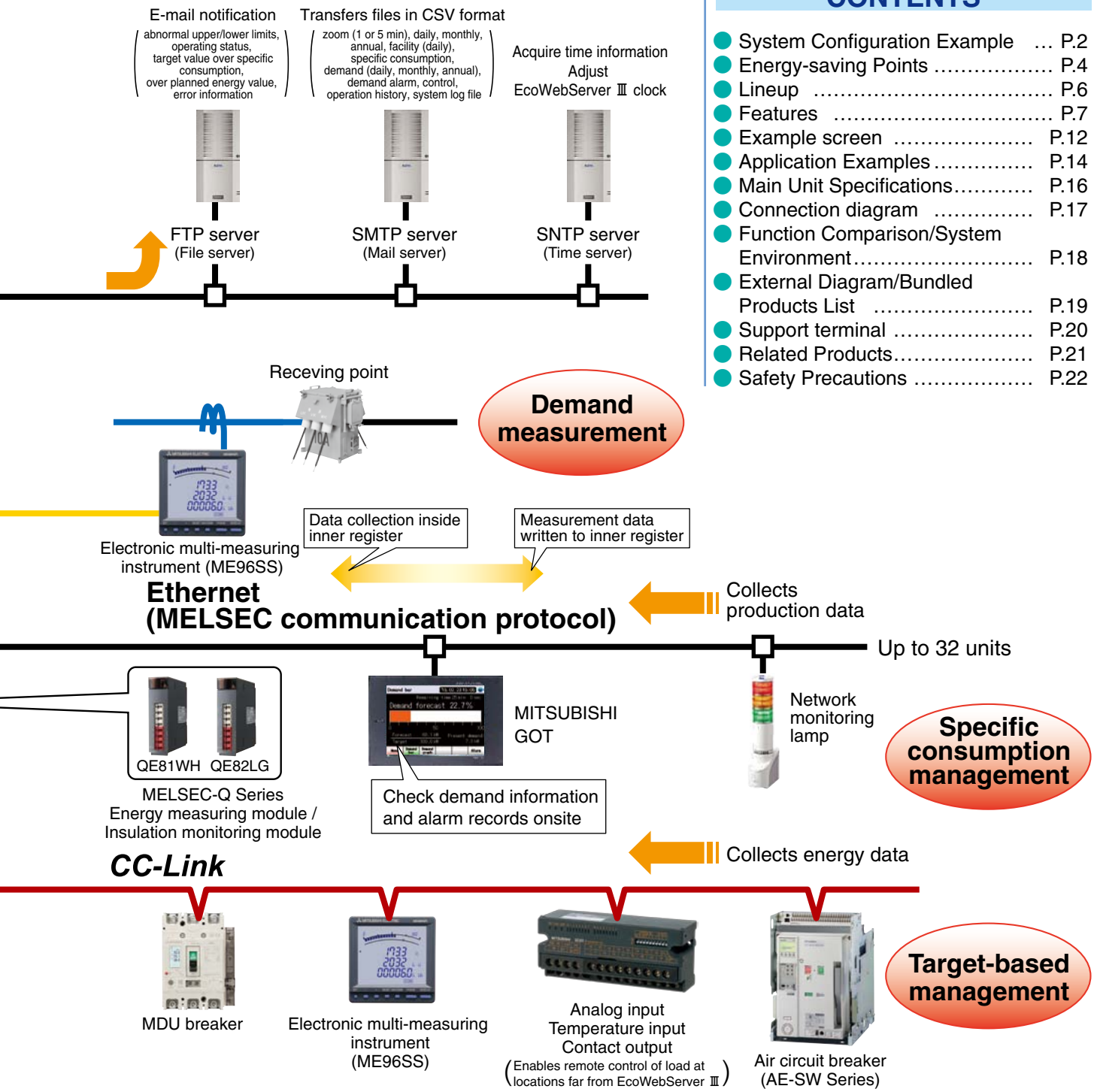

E-mail notification
abnormal upper/lower limits, operating status, target value over specific consumption, over planned energy value, error information
Transfers files in CSV format
zoom (1 or 5 min), daily, monthly, annual, facility (daily), specific consumption, demand (daily, monthly, annual), demand alarm, control, operation history, system log file
Acquire time information
Adjust EcoWebServer III clock
FTP server (File server)
SMTP server (Mail server)
SNTP server (Time server)
Receving point
Demand measurement
Electronic multi-measuring instrument (ME96SS)
Data collection inside inner register
Measurement data written to inner register
Ethernet
(MELSEC communication protocol)
Collects production data
Up to 32 units
QE81WH QE82LG
MELSEC-Q Series
Energy measuring module / Insulation monitoring module
MITSUBISHI GOT
Check demand information and alarm records onsite
Network monitoring lamp
Specific consumption management
CC-Link
Collects energy data
MDU breaker
Electronic multi-measuring instrument (ME96SS)
Analog input
Temperature input
Contact output
(Enables remote control of load at locations far from EcoWebServer III)
Air circuit breaker (AE-SW Series)
Target-based management
Production line
For monitor equipment status
Oh, an e-mail warning of an alarm in production line A.
Alarm activated
For managing objectives
Did we achieve our target this month?
For improvement activities
We can reduce waste even further here.

Importance of visualizing energy

Essentials Issues for Saving Energy

Target Value Management

Managing objectives is a very important issue when practicing energy savings.
“Target value management” is the process of transforming actual conditions into ideal conditions, and thereby requires understanding the actual situation and how much “unseen” waste there is. For this reason, target value management involves performing detailed management of operations, moving from months to days and lines to equipment, and evolving from “seeing” waste to “understanding” it.
Additionally, when using target value management, it is necessary to construct and put into practice an organization that values “people who set objectives (manage),” “people who find things” and “people capable of thinking of improvements and implementing them.”

Target Value Management

Specific consumption management

In lines where there is a large difference in production volume, it is difficult to save energy and improve productivity using energy management alone.
By understanding specific consumption —energy consumed per product— waste in energy and production processes can be clarified, and it becomes easier to implement countermeasures.
Rather than simply not using energy, it’s important to use energy efficiently when, where and how much needed.

Specific consumption management

EM (Energy loss Minimum) activities

Actual
- No-load power is consumed when there is no production.
- Lights are on in areas where there are no people.
- There are no inverters, so an unnecessary amount of energy is being used.

This is specific consumption management

Improvements

Discover waste

Ideal

Energy required for production:
- **Necessary time** (year, month, day, hour, minute, second...)
- **Necessary place** (all, building, department, production line, equipment)
- **Necessary amount** (technical standards, use/operation standards)

Improve productivity (→ Save energy)

The ideal condition is efficient use of the necessary amount of energy, at the necessary place and necessary time.

Importance of Demand Monitoring

Energy Saving by visualizing demand

What is "Demand"....?

Demand is average electric power at a specified period. This period for demand differs for each country and the way of management method.
Electric fee is basically determined based on the highest demand in one year(→contract demand).
The highter the contract demand is, the more expensive the electric basic charge is.
There are two types of basic demand management method as below.

(2) Fixed block demand management method

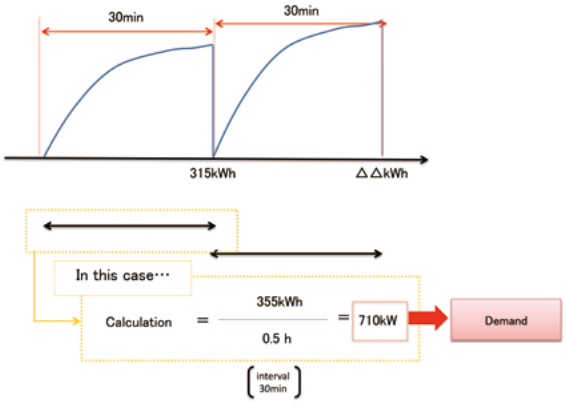
The demand period consists of only an interval.

(2) Rolling block demand management method

The demand period consists of interval and sub interval.
Interval is the period for caluclation of average electric.
Sub interval is the period for updata the calculation.

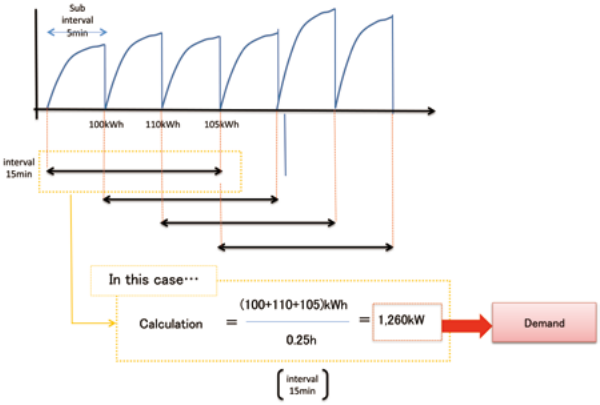
Fixed block demand management

Ex) Interval：30min



Rolling block demand management method

Ex) Interval：15min、Sub interval 5min



EcoWebServer Ⅲ with demand monitoring function comply with the Fixed block demand management method. Interval can be selected from 15min or 30min.

Subtotal Volume
- Demand (power demand) is computed and calculated by taking pulses from the multi-measuring meter (transaction meter) for power demand.

Estimation
- The value at the end of the 30-minute time limit is estimated from the measured demand (power demand).

Warning
- Based on the results of the estimation, an alarm is output and a notification sent when the objective demand has been exceeded.
- The alarm notification can be a buzzer, display lamp, etc., which is sent through the contact output.

Load interruption
- Load interruption may be necessary depending on power use.
- A control output signal can be used to automatically interrupt the load.

Reduce demand

||

Reduce basic free

Realize visualization of energy and demand management with one EcoWebServer Ⅲ.

Lineup

Mitsubishi Electric Energy-saving Data Collection Server EcoWebServer Ⅲ

Product name	Energy-saving Data Collection Server
Model no.	MES3-255C-EN
Communication	CC-Link

Product name	Energy-saving Data Collection Server (with demand control function)
Model no.	MES3-255C-DM-EN
Communication	CC-Link

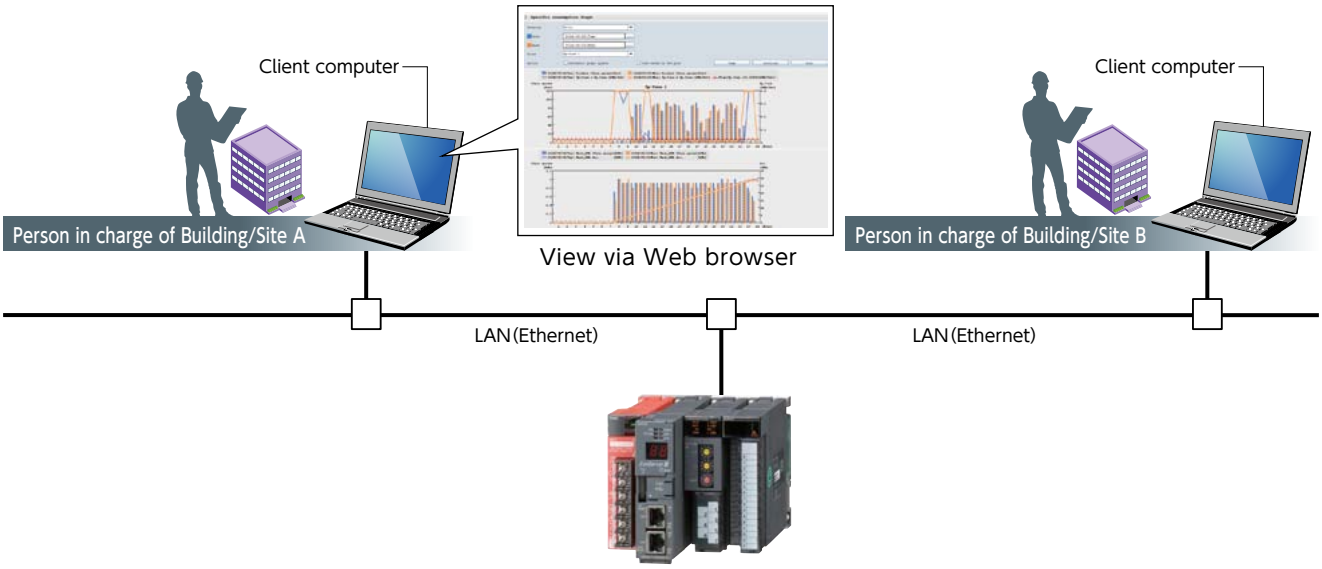
Network Specifications (CC-Link)

Item		Specifications
CC-Link communications section	Transmission speed	156kbps ／ 625kbps ／ 2.5Mbps ／ 5Mbps ／ 10Mbps
	Maximum total cable length (maximum transmission distance)	Transmission speed: 156kbps — Cable length between stations: 20cm or more — Maximum total cable length: 1200m Transmission speed: 625kbps — Cable length between stations: 20cm or more — Maximum total cable length: 900m Transmission speed: 2.5Mbps — Cable length between stations: 20cm or more — Maximum total cable length: 400m Transmission speed: 5Mbps — Cable length between stations: 20cm or more — Maximum total cable length: 160m Transmission speed: 10Mbps — Cable length between stations: 20cm or more — Maximum total cable length: 100m
	Maximum number of connected units	64 units However, conditions on the right must be met 1. Total number of stations a+b×2+c×3+d×4≦64 a: 1 station occupied, b: 2 stations occupied, c: 3 stations occupied, d :4 stations occupied 2. Number of units connected 16× (A+D) +54×B+88×C≦2304 A: Number of remote I/O stations ···64 max B : Number of remote device stations ···42 max C : Number of local stations, intelligent device stations ···26 max D : Number of reserve stations * * Unregistered station numbers from station 1 to the maximum number of stations are counted as reserve stations.
	Communication method	Broadcast polling method
	Synchronization method	Frame synchronization method
	Encoding method	NRZI method
	Transmission route format	Bus (RS-485)
	Transmission format	HDLC compatible
	Error control method	CRC ($x^{16}+x^{12}+x^{15}$)
	Connecting cable	CC-Link Ver1.10-compatible dedicated cable

Features

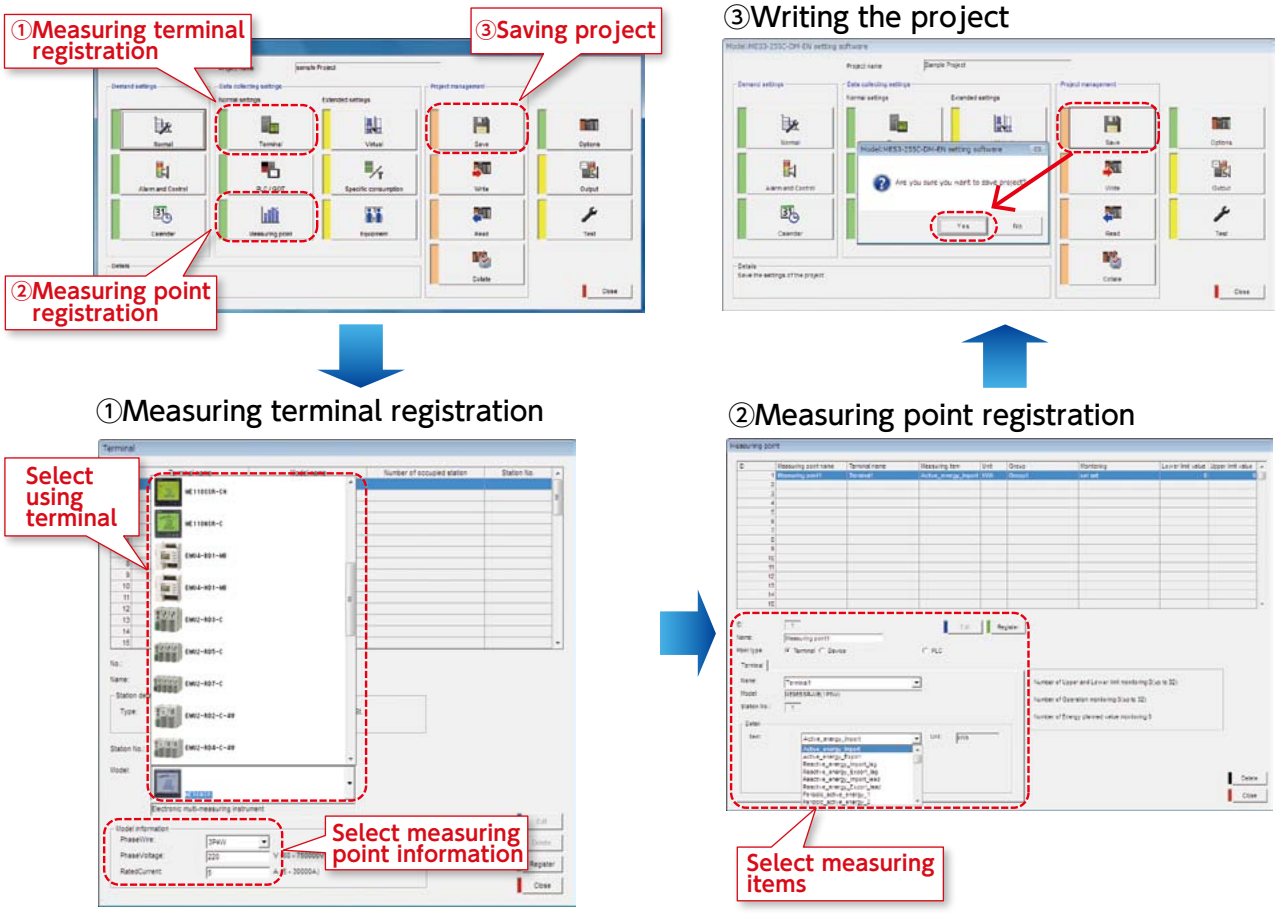
1. Measured data can be displayed on a Web browser with graphs without any programing.

● Using the HTTP Server function, the collected data is transmitted via Ethernet across the Internet/Intranet so that all employees can confirm and understand amount of energy used in real-time.



2. Easy setting by using dedicated setting software.

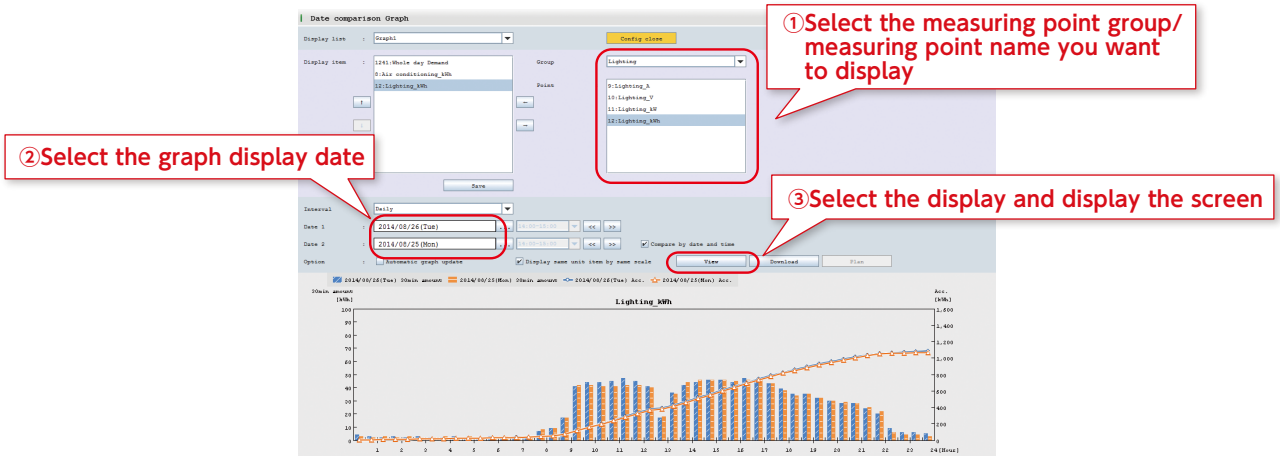
● The minimum required registering configuration on the measuring is "①Measuring terminal registration" → "②Measuring point registration" → "③Writing project" only.



3. Add new comparison screens according to the scenario. Strong support provided for analyzing activities.

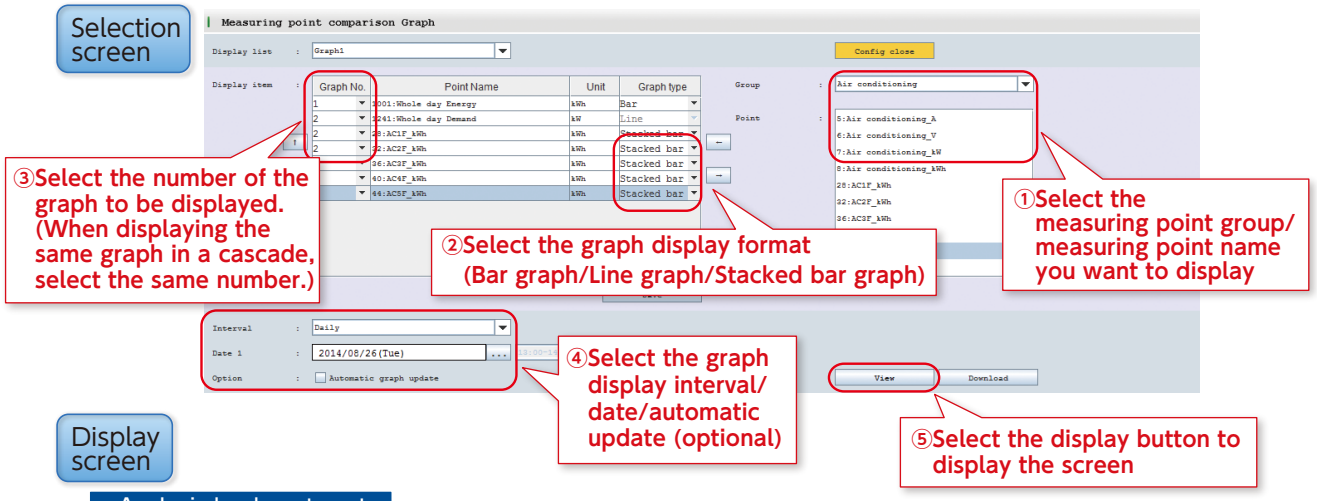
1 Date comparison graph

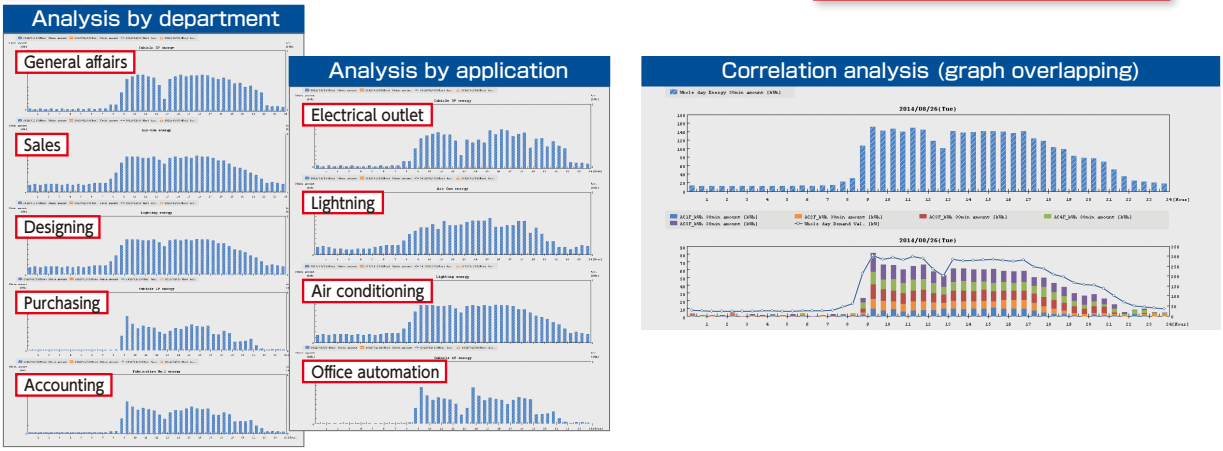
- The display procedure is select “① Measuring point group/name → ② Graph display date” and select “③ Display” only.
- A comparison of the specified date and items can be displayed.


①Select the measuring point group/ measuring point name you want to display
②Select the graph display date
③Select the display and display the screen

2 Measuring point comparison graph

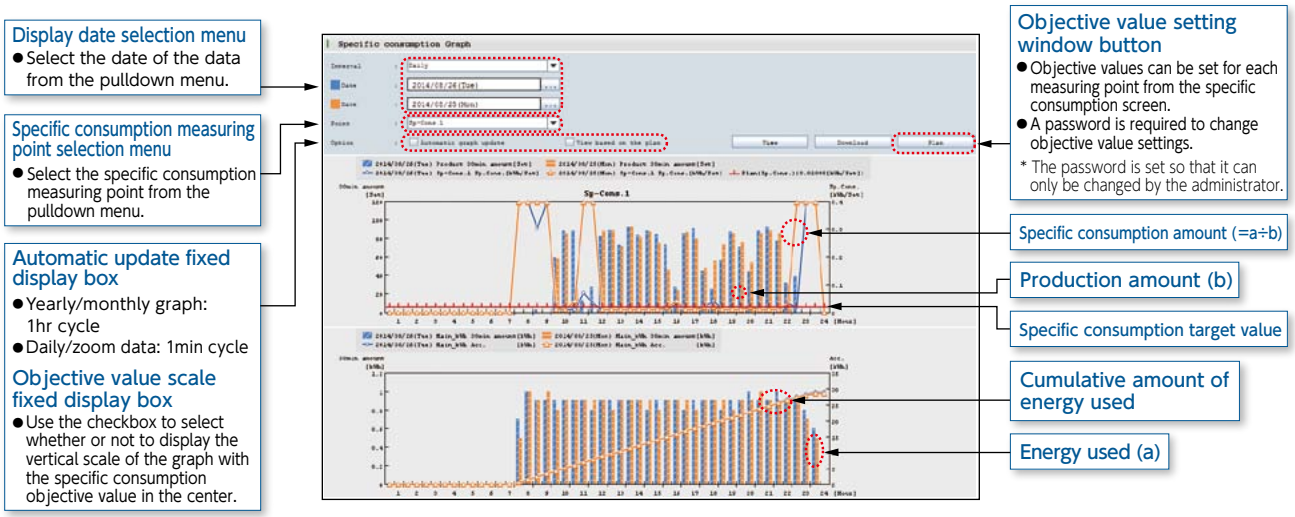
- The display procedure is to select “① Measuring point group/name → ② Graph display format → ③ Graph No. → ④Graph display intervals etc.” and select “⑤ Display” only.
- It’s possible to select graphs and display various graphs in the format of your choice. It’s also possible to display the same graph, making it easy to understand graph correlations.


Selection screen
Measuring point comparison Graph
③Select the number of the graph to be displayed. (When displaying the same graph in a cascade, select the same number.)
②Select the graph display format (Bar graph/Line graph/Stacked bar graph)
①Select the measuring point group/ measuring point name you want to display
④Select the graph display interval/ date/automatic update (optional)
⑤Select the display button to display the screen
Display screen



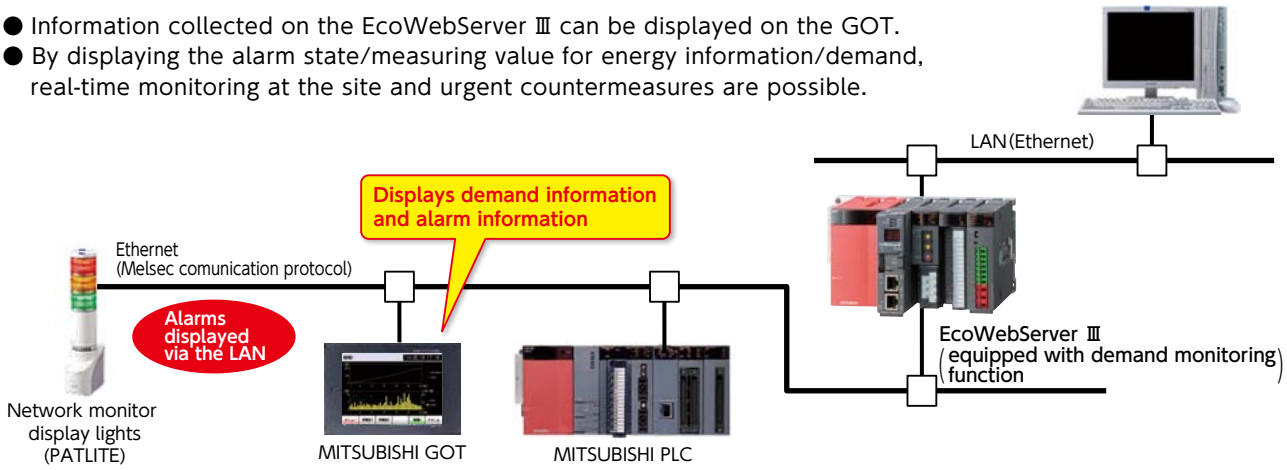
4. Easily understand productivity by confirming the specific consumption graph

- By integrating the production volumes from the measuring terminal and PLC, the specific consumption graph can be easily displayed and points related to the drop in specific consumption can be easily understood.
- Additionally, by comparing two specific consumption graphs at the same line, it is possible to confirm the benefits at the time the countermeasure was implemented.


Display date selection menu
● Select the date of the data from the pulldown menu.
Specific consumption measuring point selection menu
● Select the specific consumption measuring point from the pulldown menu.
Automatic update fixed display box
● Yearly/monthly graph: 1hr cycle
● Daily/zoom data: 1min cycle
Objective value scale fixed display box
● Use the checkbox to select whether or not to display the vertical scale of the graph with the specific consumption objective value in the center.
Specific consumption Graph
Sg-Cons.1
Objective value setting window button
● Objective values can be set for each measuring point from the specific consumption screen.
● A password is required to change objective value settings.
* The password is set so that it can only be changed by the administrator.
Specific consumption amount (=a÷b)
Production amount (b)
Specific consumption target value
Cumulative amount of energy used
Energy used (a)

5. Connection with Mitsubishi Electric GOT display device.

- Information collected on the EcoWebServer Ⅲ can be displayed on the GOT.
- By displaying the alarm state/measuring value for energy information/demand, real-time monitoring at the site and urgent countermeasures are possible.

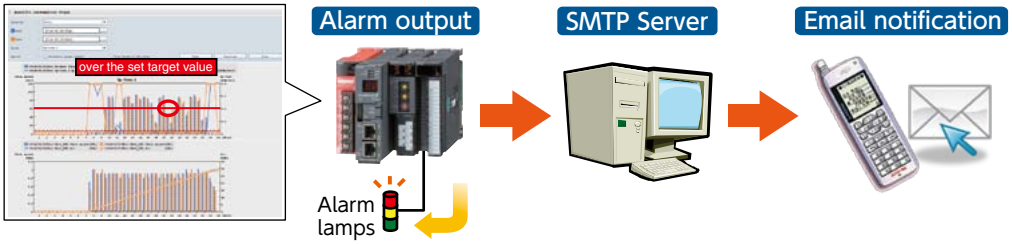


6. Alarm output/email notification through a variety of monitoring functions.

- Objective values (upper/lower) and error information can be transmitted through email notifications/ alarm output, and changes in status can be recognized immediately. The result of the careful target value management and monitoring the status monitoring ensure that problems occurring at the site are not overlooked.

<Items monitored>

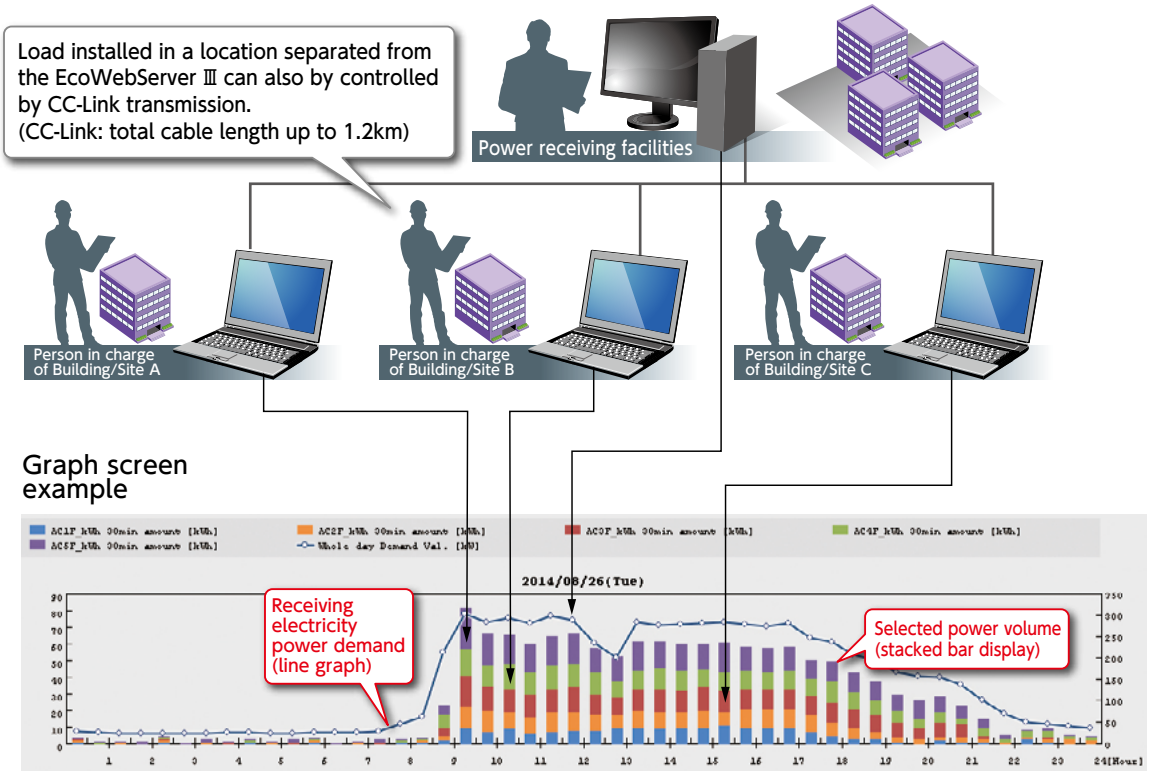
- Energy plan value
- Specific consumption objective value
- Upper/lower irregularity
- Change in operating state
- Error information
- Demand alarm



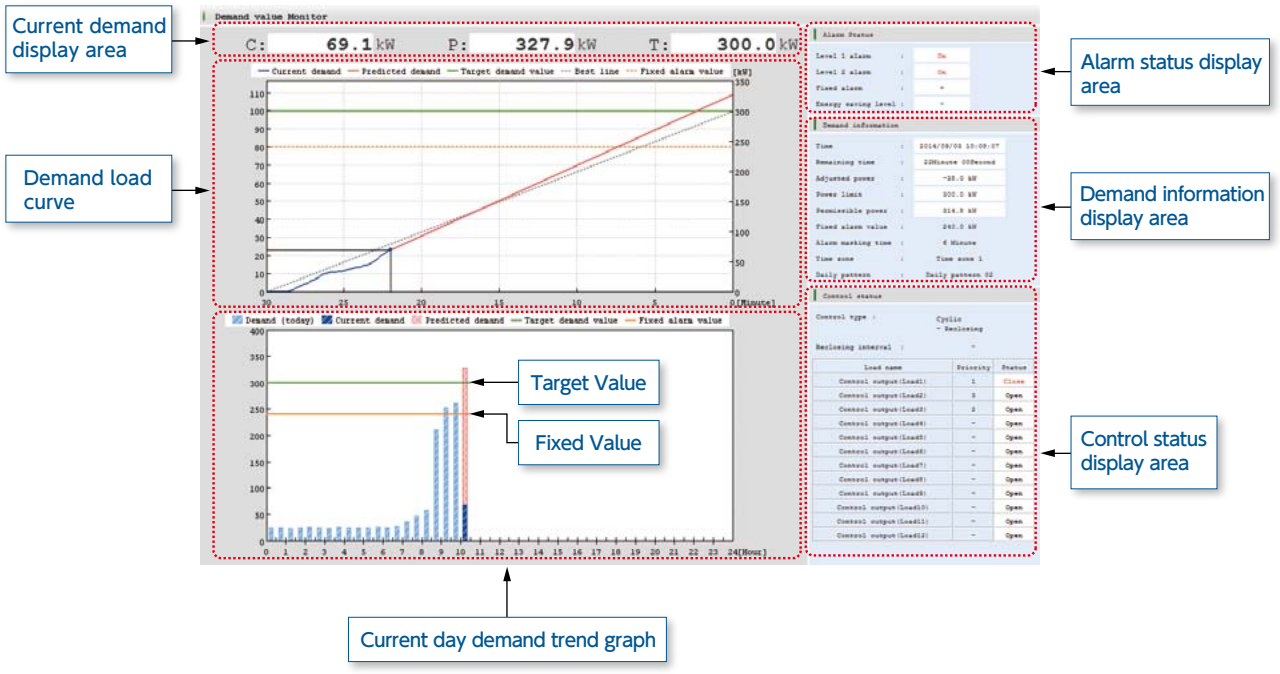
7. Simultaneously visualize demand trends and energy consumption per building/load

Compatible model: MES3-255C-DM-EN only

● As the breakdown of power demand (load balance) can be easily understood from the power demand trends and stacked bar graphs for each regional substation and operating equipment can be reviewed, and operations can be planned and proposed based on the analysis results, which enable peak shift/peak cut.


Load installed in a location separated from the EcoWebServer Ⅲ can also by controlled by CC-Link transmission.
(CC-Link: total cable length up to 1.2km)
Power receiving facilities
Person in charge of Building/Site A
Person in charge of Building/Site B
Person in charge of Building/Site C
Graph screen example
2014/08/26(Tue)
Receiving electricity power demand (line graph)
Selected power volume (stacked bar display)

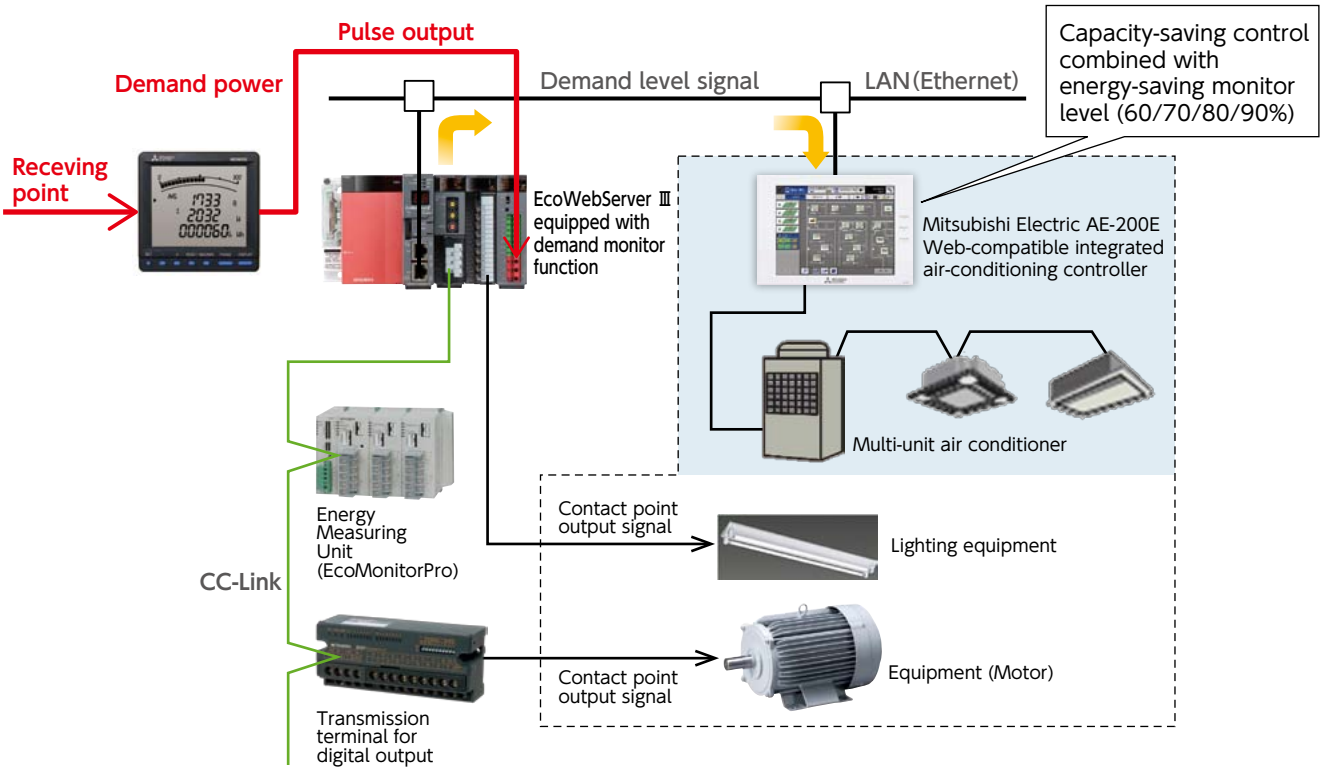
●Demand monitor screen



8. Energy-saving air conditioning operation realized by interconnecting with integrated air-conditioning controller.

Compatible model: MES3-255C-DM-EN only

● Demand control possible by interconnecting with Mitsubishi Electric Web-compatible integrated controller—AE-200E, AG-150A, etc.
Additionally, automatic control of load possible through contact point output via main unit of EcoWebServer Ⅲ and CC-LINK.

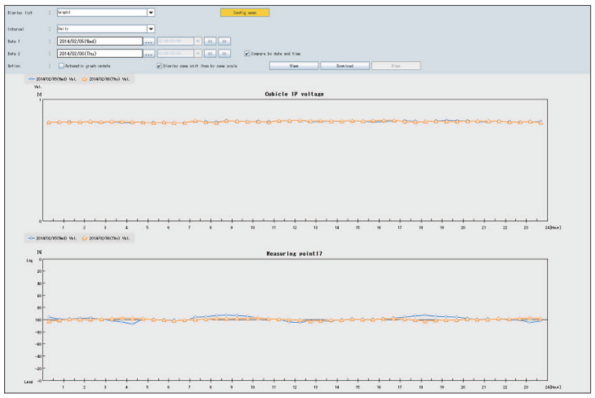


Example screen

1. Date comparison graph screen

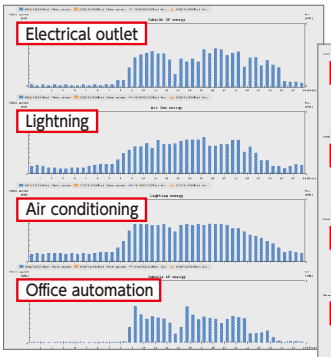
Electric consumption/current display

Voltage/power factor display



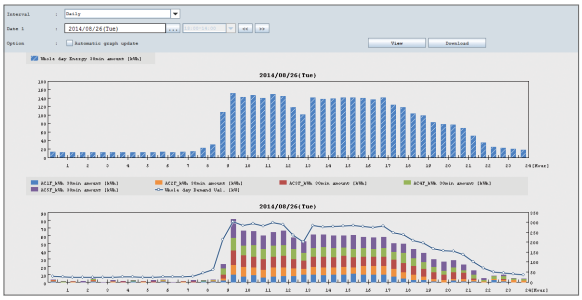
2. Measuring point comparison graph screen

Analysis by application



Analysis by department

Correlation analysis (graph overlapping)

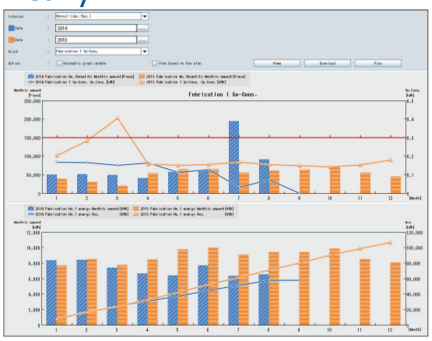


3. Specific consumption graph screen

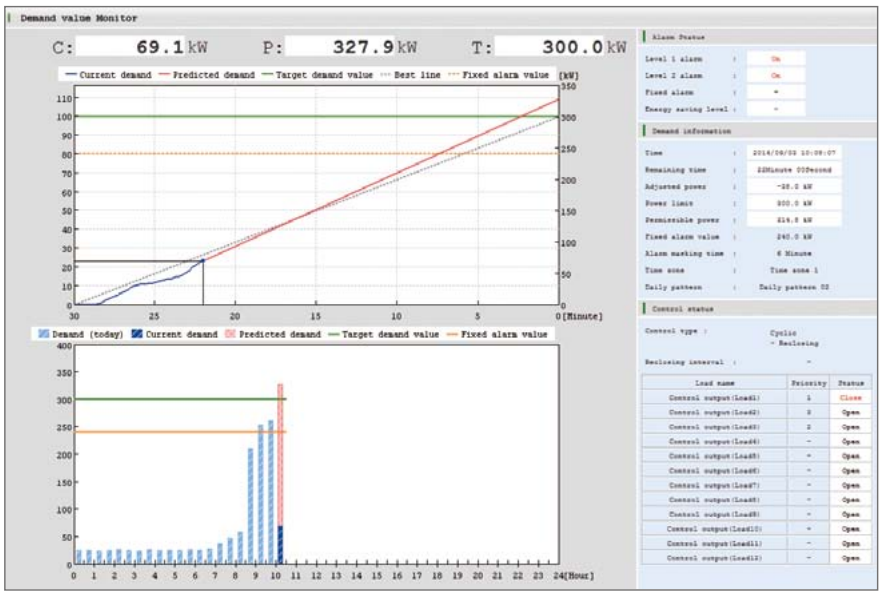
Daily

Monthly

Yearly



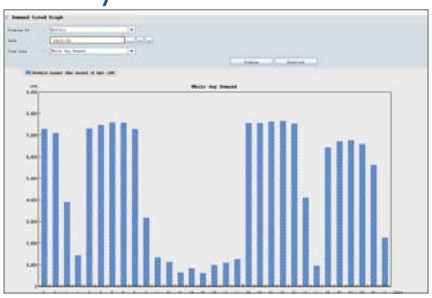
4. Demand monitor screen



5. Demand trend graph screen

Daily

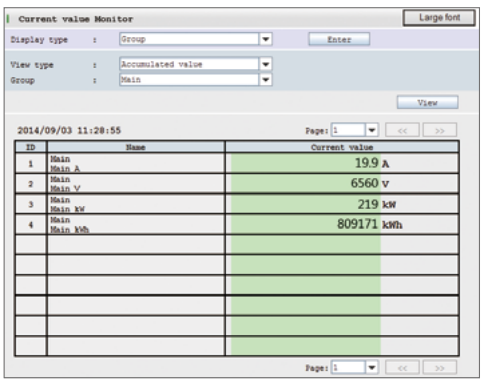
Monthly



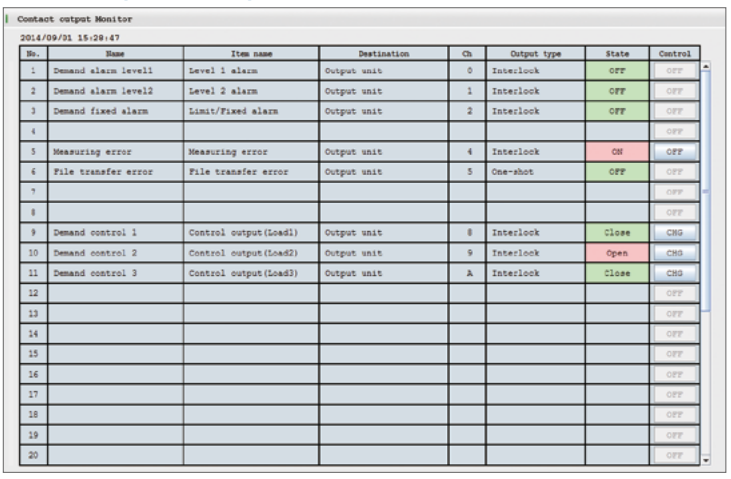
Yearly

6. Current value/contact point output monitor screen

Current value



Contact point output


Contact output Monitor
2014/09/01 15:28:47
No. Name Item name Destination Ch Output type State Control
1 Demand alarm level1 Level 1 alarm Output unit 0 Interlock OFF OFF
2 Demand alarm level2 Level 2 alarm Output unit 1 Interlock OFF OFF
3 Demand fixed alarm Limit/Fixed alarm Output unit 2 Interlock OFF OFF
5 Measuring error Measuring error Output unit 4 Interlock ON OFF
6 File transfer error File transfer error Output unit 5 One-shot OFF OFF
9 Demand control 1 Control output(Load1) Output unit 8 Interlock Close CHG
10 Demand control 2 Control output(Load2) Output unit 9 Interlock Open CHG
11 Demand control 3 Control output(Load3) Output unit A Interlock Close CHG

Application Examples

■Factories

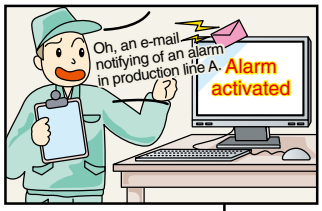
Support Energy-saving Activities using “Visible Management”.

1. Monitor/Manage energy by department
2. Specific consumption-based management of energy-saving activities
3. Monthly/Annual target-based management
4. Monitoring of equipment operating status
5. Manage/Record energy data

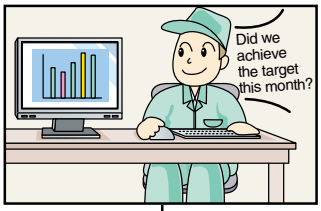
In the office…

Plant manager

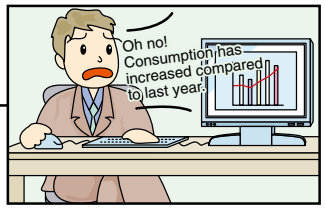
To monitor equipment status



For target management



Employees



LAN(Ethernet)

At production site…

Factory No. 1

CC-Link ← Measurement data

MDU breaker

EcoMonitorPro

Production Department
- Power/Power consumption
- Power factor
- Consumption of water/steam/air/gas/other
- Specific consumption data
- Production quantity, other

Ethernet communications (MELSEC communications protocol)

PLC

PLC

Office

Administration Department
- Air conditioning
- Lighting
- Office automation equipment
- Electrical outlets
- Water/Gas usage

Factory No. 2

CC-Link

Electronic multi-measuring instrument

MDU breaker

Energy Measurement Unit (EMU3 Series)

EcoMonitorPro

MELSEC-Q Series programmable controller

Operating status (contact signal)

Production quantity (pulse signal)

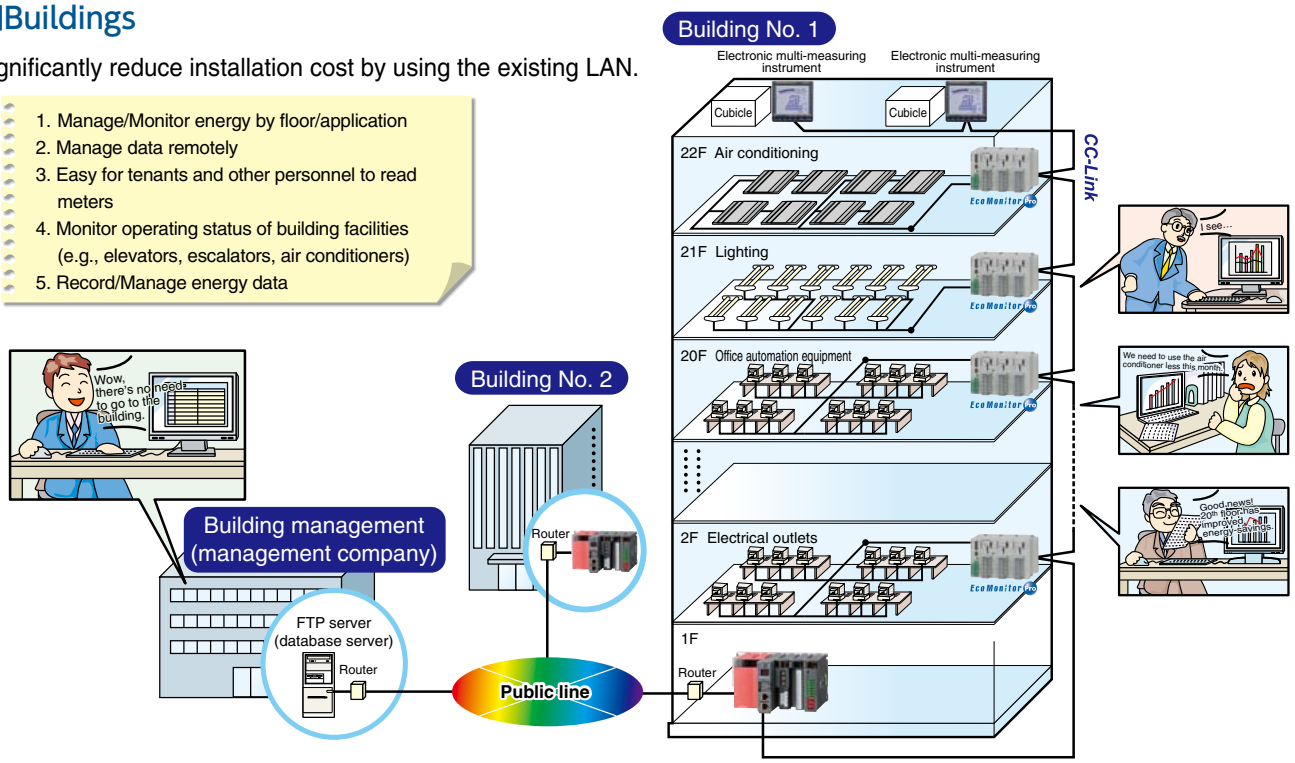
Production equipment

For improvement activities

Buildings

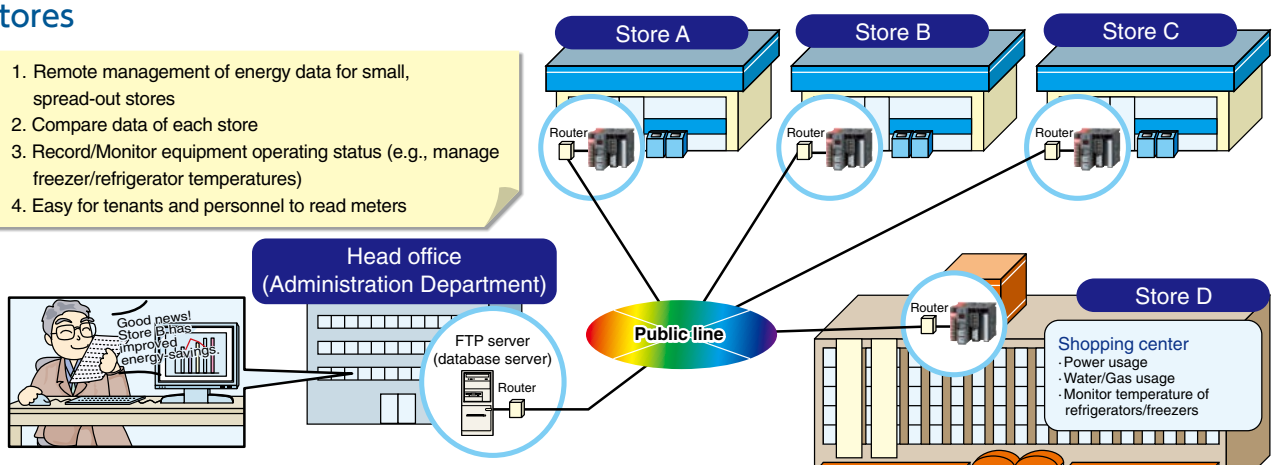
Significantly reduce installation cost by using the existing LAN.

1. Manage/Monitor energy by floor/application
2. Manage data remotely
3. Easy for tenants and other personnel to read meters
4. Monitor operating status of building facilities (e.g., elevators, escalators, air conditioners)
5. Record/Manage energy data



Stores

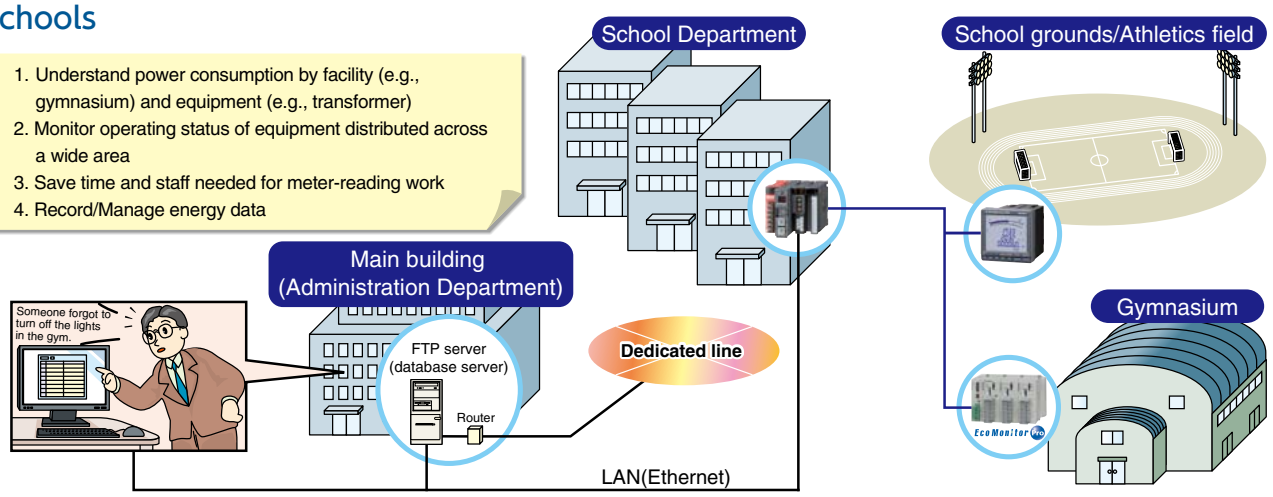
1. Remote management of energy data for small, spread-out stores
2. Compare data of each store
3. Record/Monitor equipment operating status (e.g., manage freezer/refrigerator temperatures)
4. Easy for tenants and personnel to read meters



* When using a public line, a dial-up router is required.
* For use via the Internet, a separate contract with an Internet service provider is required.

Schools

1. Understand power consumption by facility (e.g., gymnasium) and equipment (e.g., transformer)
2. Monitor operating status of equipment distributed across a wide area
3. Save time and staff needed for meter-reading work
4. Record/Manage energy data



Main Unit Specifications

■MES3-255C-EN front

7-segment LED display
Displays an error code when an error is detected.
In addition, in IP address display mode, the preset IP address is displayed at start-up.

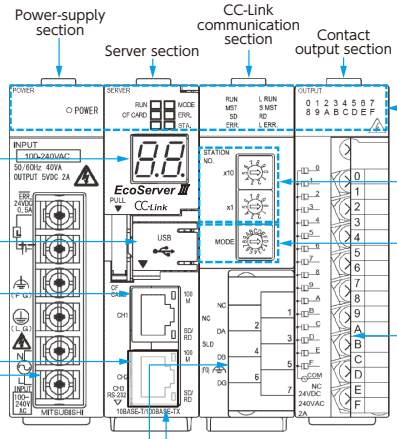
USB interface
Not used.

LAN interface CH1
Use connected to a computer network.

LAN interface CH2
Use when connected to a programmable controller network.

Power-supply terminal block
Connect power supply. (Note 1)

CC-Link terminal block
Connect CC-Link communication cable.



LED display
Display each status.

CC-Link station number setting switch
Set CC-Link station number.

CC-Link transmission speed setting switch
Set CC-Link transmission speed.

Contact output terminal block
Closed when conditions monitoring function conditions are met.
Connect external equipment such as buzzers and lamps.

LED display
Display each status.

■MES3-255C-DM-EN front

7-segment LED display
Displays an error code when an error is detected.
In addition, in IP address display mode, the preset IP address is displayed at start-up.

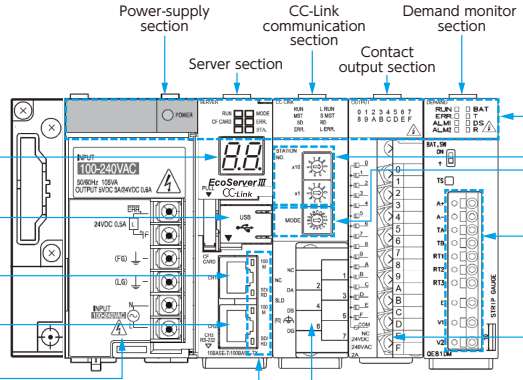
USB interface
Not used.

LAN interface CH1
Use connected to a computer network.

LAN interface CH2
Use when connected to a programmable controller network.

Power-supply panel
When you open the panel, you will see the power-supply connection terminal. (Note 1)

LED display
Display each status.



LED display
Display each status.

CC-Link station number setting switch
Set CC-Link station number.

CC-Link transmission speed setting switch
Set CC-Link transmission speed.

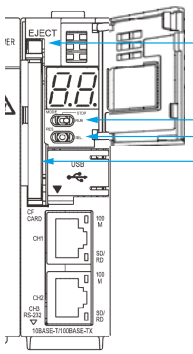
Demand monitor section connection terminal
Connect cable to pulse input, alarm output and control output for demand monitoring. (Note 2)

Contact output terminal block
Closed when conditions monitoring function conditions are met.
Connect external equipment such as buzzers and lamps.

CC-Link terminal block
Connect CC-Link communication cable.

■Front surface (cover of Server section opened)/bottom surface (CC-Link transmission device)

Front surface (cover of Server section opened)



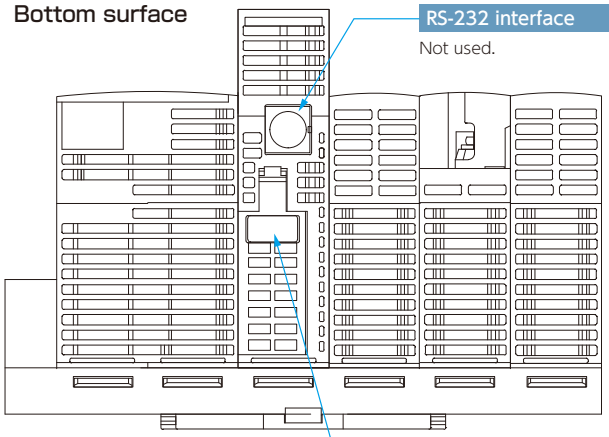
CompactFlash™ memory card EJECT button
Push the button and remove the CompactFlash™ memory card.

MODE/STOP/RUN switch
Normally, used in RUN state.

RESET/SELECT switch
Used when resetting the main unit.

CompactFlash™ memory card
Stores programs for collecting and displaying data. Data collected is also saved to it. (Note 3)

Bottom surface



RS-232 interface
Not used.

Battery storage compartment
Store the battery.
Remove the cover and connect the connector. (Note 4)

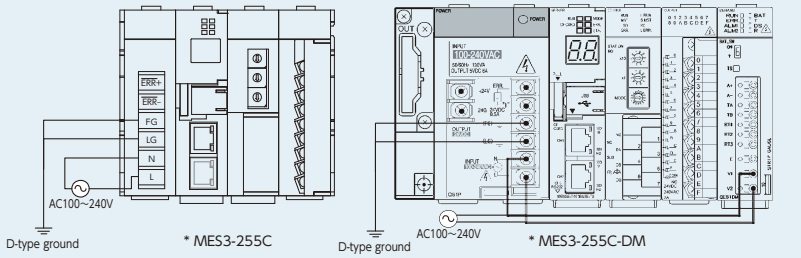
(Note 1) Connect to AC100–240V(+10%, −15%)50/60Hz(±5%). Do not connect to a power supply other than that specified as this may cause an accident.
(Note 2) A separate power supply is required for the demand monitor section when using. When using the main device, AC100–240V(+10%, −15%)50/60Hz power is required for the demand monitor connector terminals V1, V2. It is possible to connect power from the power-supply module.
(Note 3)
- CompactFlash™ memory cards are used in a constantly attached state. If they are removed while the power is on or the memory card is being accessed, this product will malfunction.
- When removing the card from the memory card slot, be sure to place the RESET/SELECT switch in the SELECT position and remove it only after turning off the power supply and the CF CARD LED has turned off.
- Do not use the CompactFlash™ memory card with any other product. This could corrupt the internal data.
- Do not insert a CompactFlash™ memory card other than the one included in the package in this device. If a different card is inserted, the system will not operate correctly.

(Note 4) Be sure to exchange the battery within three minutes after turning off the power. If more than three minutes passes after the battery is removed, the final one hour of data may be lost or the clock may initialize.
(Data or configuration settings from more than one hour before will not be initialized). If the clock initializes, please set again after backing up the data.
Refer to the operating manual (hardware edition) for the battery replacement procedure.

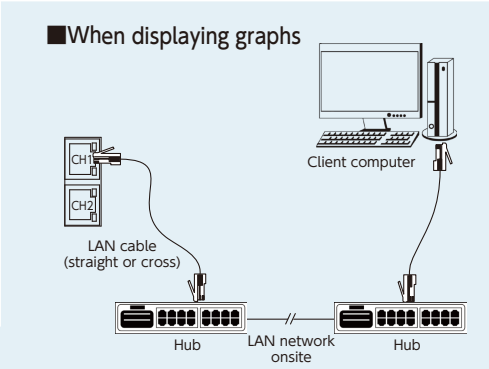
Connection diagram

Model: MES3-255C-EN, MES3-255C-DM-EN

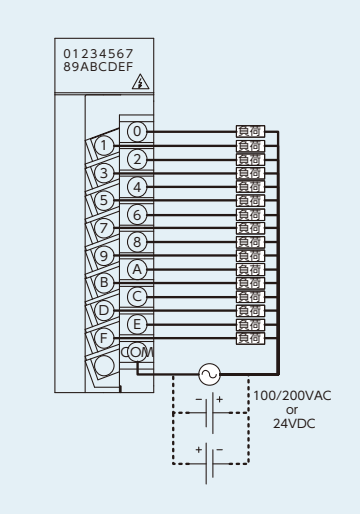
Power-supply section

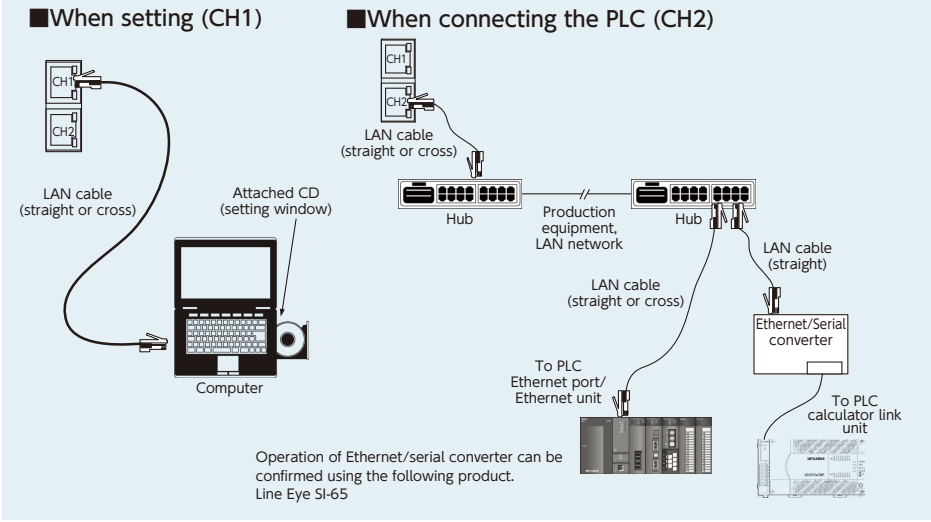


Server communications section (LAN interface)

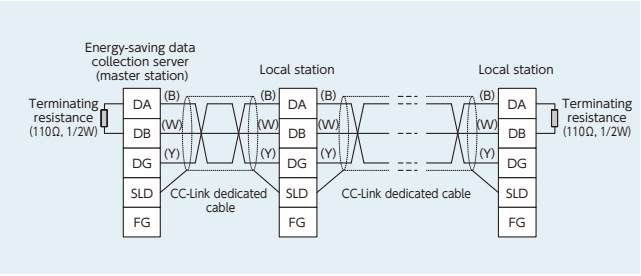


Connecting point output section



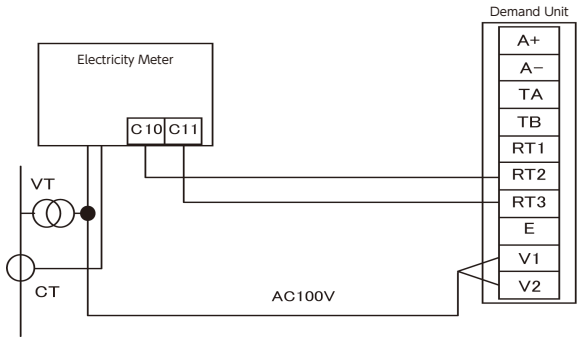


CC-Link communication section



Demand monitor section

(1) Where the transaction meter of the multi-measuring power demand meter is 10,000pulse/kWh



Function Comparison/System Environment

Functions

Product Name			MES3-255C-EN	MES3-255C-DM-EN
Demand function			—	Yes
Connection device	CC-Link terminal device		Number of remote I/O stations≦64、 Number of remote device stations≦42、 Number of local stations≦26	
	MITSUBISHI PLC, GOT		MC protocol connection (LAN CH2 used) * device read/write CC-Link unit (local) connection * device read	
Number of measuring points	Measuring points		255 points	
	Number of operation measuring points		32 points (includes 255 measuring points)	
	Virtual measuring points		128 points	
	Specific consumption measuring points		64 points	
	Connection point output		32 points	
	Demand monitoring	Receiving demand	—	2 points (fixed) whole day, timeframe 1-10
		Receiving electric energy	—	2 points (fixed) whole day, timeframe 1-10
Data saving function * CSV format	Zoom (every 1min) data		62-day amount	
	Zoom (every 5min) data		14-day amount	
	Daily data (on the hour or every 30min)		186-day amount	
	Monthly data (specified time (00min) once a day)		60-month amount	
	Yearly data (specified time (00min) once a month)		5-year amount	
	Virtual measuring point data (daily)		186-day amount	
	Virtual measuring point data (monthly)		60-month amount	
	Virtual measuring point data (yearly)		5-year amount	
	Specific consumption measuring point data (daily)		186-day amount	
	Specific consumption measuring point data (monthly)		60-month amount	
	Specific consumption measuring point data (yearly)		5-year amount	
	Equipment data (daily)		186-day amount	
	Operating history data		64KB×4 files	
	System log		256KB×8 files	
	Demand data (daily)		—	186-day amount
	Demand data (monthly(daily maximum))		—	60-month amount
	Demand data (yearly(monthly maximum))		—	5-year amount
	Demand alarm/Control log		—	128KB×62 files
Display function	Real-time	Demand monitor	—	・Displays current time limit demand load curve ・Displays graph of same day demand results
		Current value monitor	The current value of the specified measuring points are displayed in the units registered for groups and display lists Displays differential display mode function/differential values for specified measuring points (time differential: amount used from previous hour to present time, daily differential/monthly differential: amount used from previous summary time to present)	
		Connection point output monitor	Displays connecting point output status	
	Graph display	Demand trend graph	—	Displays demand trend graph
		Measuring point comparison graph	Displays comparison of multiple measuring point data for specified display intervals/time displayed	
		Daily comparison graph	Displays comparison of specified measuring points for desired date	
		Specific consumption graph	Displays graph after dividing energy volume by number produced	
		Equipment graph	Displays graph of equipment efficiency, number of defects and equipment energy volume	
	Data file		Download measuring point data, virtual measuring point data, specific consumption data, equipment data, operating history data, system log, demand data *, alarms/control log * (*only for products with demand monitoring functions)	
	Equipment values list		Displays measuring points, connection point output and content of email notifications set for EcoServerⅢ	
Monitoring functions	Email notification function		Transmits main unit error notifications, periodic notifications, upper/lower limit notifications, operating status notifications, specific consumption objective value notifications, energy plan value notifications and demand notifications * to the specified SMTP Server (*only for products with demand monitoring functions)	
	Connection point output		Outputs connection points for EcoWebServerⅢ connection point output module or combined CC-Link input/output module	

Recommended system environment

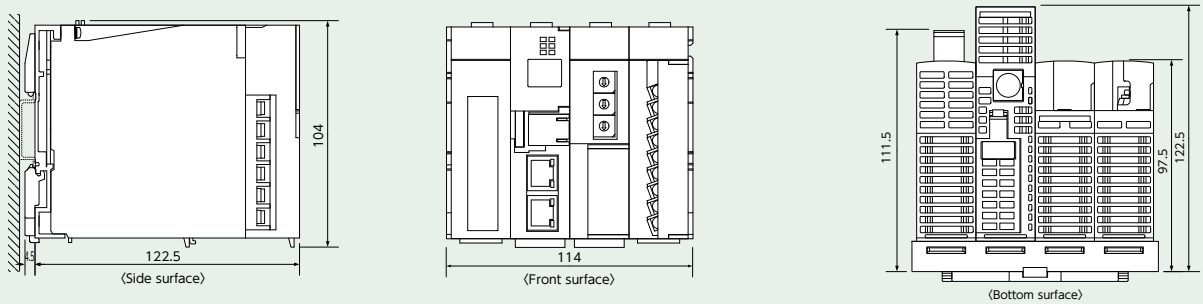
Item	Specification
OS (basic software)	Microsoft Windows XP Professional(32bit)SP3, Microsoft Windows Vista® Business(32bit)SP2 Microsoft Windows 7 Professional(32bit, 64bit)SP1, Microsoft Windows 8.1 Pro(32bit, 64bit)
CPU	Pentium® 1GHz processor or faster, or compatible microprocessor (DOS/V-compatible device)
Memory	1GB or more
Hard-disk	If data accumulated by Eco EcoServer III is saved to a computer, that storage capacity is required.
CD drive	1 group or more (required for installing setup software)
Display resolution	1280×1024 pixels or more
Display colors	65536 colors or more
Input device	Mouse and keyboard
External interface	10BASE-T / 100BASE-TX
Web browser	Internet Explorer® 7, 8(32bit), 9(32bit), 10(32bit), 11(32bit)
Java plug-in	Oracle Java™ 7 JRE 7(32bit), Oracle Java™ 6 JRE 6(32bit)

External Diagram/Bundled Products List

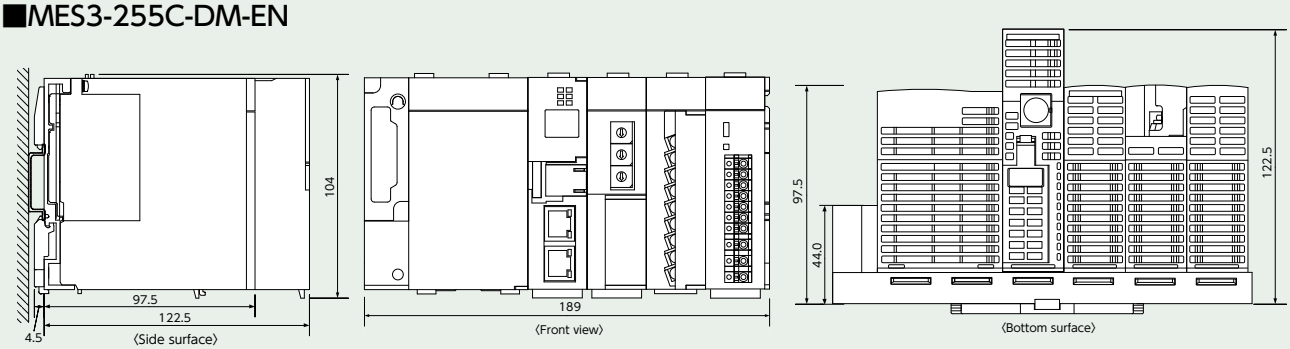
External dimensions

Unit : mm

■MES3-255C-EN



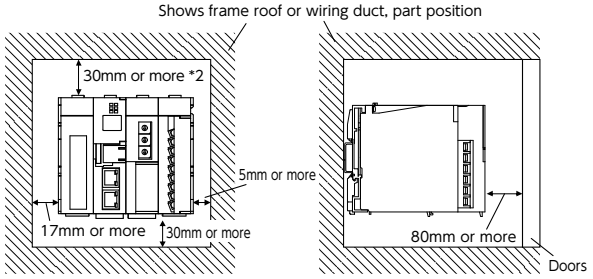
■MES3-255C-DM-EN



Peripheral installation conditions

■MES3-255C-EN

Peripheral installation conditions *1

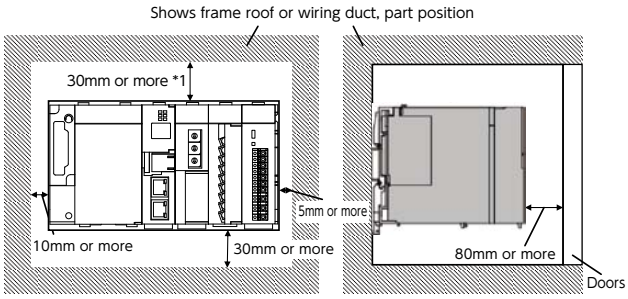


*1 These are the conditions when considering radiation. At the same time, please secure enough space to replace the battery in the lower layer of the main unit.

*2 When height of the wiring duct is 50mm or less. Others are 40mm or more.

■MES3-255C-DM-EN

Peripheral installation conditions



*1 When height of the wiring duct is 50mm or less. Others are 40mm or more.

Bundled Products List

Product Name	CC-Link communication product	
	MES3-255C-EN	MES3-255C-DM-EN
Energy-saving Data Collection Server (main unit)	1	
CompactFlash™ memory card (software)	1	
Setup software (CD-R)/operating manual collection	1	
Battery (installed in lower surface of main unit battery section) *1	1	
Frame attachment screw	4 (M4×12)	4 (M4×14)
CC-Link terminal resistance (black: 110Ω/2W) (white: 130Ω1/2W)	Black: 2 White: 2	
IEC rail attachment adapter	Small 2 Large 2	
IEC rail attachment screw (M5 x 10)	2	
IEC rail attachment corner washer	2	
IEC rail attachment stop metal clamp	2	
Operating manual hardware edition	1	

*1 To purchase a replacement battery (model name: Q6BAT), inquire at the dealership where you purchased the main product.

Support terminal

MES3-255C-EN、MES3-255C-DM-EN (CC-Link)

Product Name	Icon/type name		Station type	Number of occupying stations
Energy measuring unit(1P2W, 1P3W, 3P3W)	EMU4-BD1-MB		Remote device station	1 station occupied
Energy measuring unit(1P2W, 1P3W, 3P3W, 3P4W)	EMU4-HD1-MB		Remote device station	1 station occupied
Energy measuring unit (Power reception and distribution monitoring(standard product 3 circuits))	EMU2-RD3-C		Remote device station	1 station occupied
Energy measuring unit (Power reception and distribution monitoring(standard product 5 circuits))	EMU2-RD5-C		Remote device station	1 station occupied
Energy measuring unit (Power reception and distribution monitoring(standard product 7 circuits))	EMU2-RD7-C		Remote device station	1 station occupied
Energy measuring unit (Power reception and distribution monitoring(3P4W 2 circuits))	EMU2-RD2-C-4W		Remote device station	1 station occupied
Energy measuring unit (Power reception and distribution monitoring(3P4W 4 circuits))	EMU2-RD4-C-4W		Remote device station	1 station occupied
Energy measuring unit	EMU3-DP1-C		Remote device station	1 station occupied
MDU breaker(WS-V)	MDU(WS-V)	NF250-SEV/HEV with MDU	Remote device station	1 station occupied
MDU breaker(WS)	MDU(WS)	NF400-SEP/HEP with MDU	Remote device station	1 station occupied
		NF600-SEP/HEP with MDU		
		NF800-SEP/HEP with MDU		
Low-voltage air circuit breaker(AE-SW with CC-Link interface unit)	AE-SW(BIF-CC)		Remote device station	1 station occupied
Electronic multi-measuring instrument	ME96SSR-MB		Remote device station	1 station occupied
Electronic multi-measuring instrument	ME96SSH-MB		Remote device station	1 station occupied
Electronic multi-measuring instrument	ME96NSR		Remote device station	1 station occupied
Electronic multi-measuring instrument with transmission function	ME110SSR-C(H)		Remote device station	1 station occupied
Electronic multi-measuring instrument with transmission function	ME110NSR-C		Remote device station	1 station occupied
Thermocouple temperature input unit	AJ65BT-68TD		Remote device station	4 station occupied
Platinum resistance temperature sensor Pt 100 temperature input unit	AJ65BT-64RD3		Remote device station	4 station occupied
Analog-digital conversion unit	AJ65BT-64AD		Remote device station	2 station occupied
Terminal block type 24 VDC input unit(8 points)	AJ65SBTB1-8D		Remote I/O station	1 station occupied
Terminal block type 24 VDC input unit(16 points)	AJ65SBTB1-16D		Remote I/O station	1 station occupied
Terminal block type 24 VDC input unit(32 points)	AJ65SBTB1-32D		Remote I/O station	1 station occupied
Terminal block type DC input transistor output combined unit (Input 8 points, Output 8 points)	AJ65SBTB1-16DT		Remote I/O station	1 station occupied
Terminal block type DC input transistor output combined unit (Input 16 points, Output 16 points)	AJ65SBTB1-32DT		Remote I/O station	1 station occupied
CC-Link master/local unit(Local station)	QJ61BT11N		Intelligent device station	1 station occupied
CC-Link master/local unit(Local station)	LCPU/LJ61BT11		Intelligent device station	1 station occupied

Related Products

EcoMeasureIII daily/monthly report specific consumption analysis software

This software supports the specific consumption analysis graph and ledger preparation of daily reports, monthly reports and annual reports from CSV files collected and output by the Mitsubishi Electric EcoWebServerIII Energy-saving Data Collection Server.

* The supporting product version, EcoMeasureIII with demand monitoring function, for EcoMeasure III, will be released soon.

●Features

(1) Easily create daily, monthly and annual reports.
- ·Ledger prepared ledger is saved as an Excel file in user-designated place.

(2) Easily perform specific consumption management as the index of energy-saving activities.
- ·Possible to manually input production volume and perform specific consumption management of energy information from EcoServer III and E-Energy.
- ·Possible to prepare each specific consumption graph (zoom, daily, weekly and monthly).

(3) Easily collect data.
- ·CSV files stored in EcoWebServer III and E-Energy can be downloaded with simple operations.

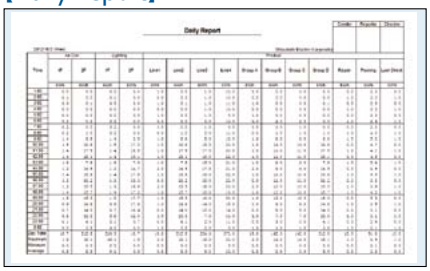
●Product Appearance

●Specifications

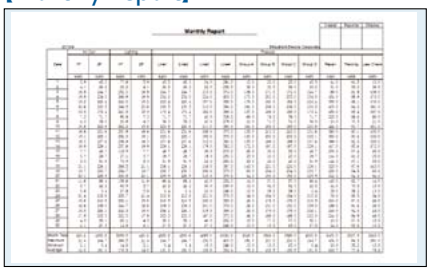
Item		Specifications	
Model name		MES3-SW1-PR-FR	
Connection devices	Number of units	8 units maximum (combination of following target devices)	
	Target devices	EcoWebServerIII (MES3-255C-EN)	
Number of virtual measurement points		Maximum 95 points (Total of 95 points including virtual measurement points for calculating measurement management points and virtual measurement points for input.) * Four arithmetic operations of up to 64 measurement management points (including constants) can be registered in the virtual measurement points for calculation.	
Number of virtual measurement point groups		Maximum five groups *Addition/Subtraction calculations for up to 32 virtual measurement points can be registered in the virtual measurement point groups.	
Ledger creation function	Ledger creation	Daily report creation, monthly report creation, annual report creation	
	Maximum number of items	The daily, monthly and annual reports can have up to 2,250 output items.	
	Calculation items	Analog (including specific consumption)	Maximum, minimum, average
		Pulse	Total, maximum, minimum, average
		Demand	Maximum
Specific consumption management function	Specific consumption display	Daily specific consumption, weekly specific consumption, monthly specific consumption and zoom specific consumption *1	
	Number of specific consumption	Maximum 100 points	
	Specific consumption target value	Can set by each specific consumption	
	Graph display	Specific consumption, target value, production volume, power used (kWh), accumulated power volume (kWh) * The specific consumption/target value/production volume units can be set freely.	
		Auto-scale function	
	List display	Daily/weekly/ monthly specific consumption	Power volume (kWh), production volume, specific consumption, accumulated power volume (kWh), accumulated production amount, specific consumption target value
		Zoom specific consumption	Power volume (kWh), production volume, specific consumption, power use/hour
	Automatic updating	Daily/weekly/ zoom specific consumption	Contents of display newly updated at designated time once per hour each hour
		Monthly specific consumption	Contents of display newly updated at designated time once per day each day
Operation environment	OS (basic software)	Microsoft Windows XP(32bit) (SP3) Home Edition/Professional Microsoft Windows Vista® (32bit) (SP2) Home Basic / Home Premium / Business / Enterprise / Ultimate Microsoft Windows Server 2003(32bit) (SP2) Standard Microsoft Windows 7(32bit/64bit) (SP1) Professional	
	Required software	Microsoft Excel 2003(SP3) / 2007(SP3) / 2010(32bit/64bit) (SP1)	
	CPU	If using Windows XP : Pentium processor of 400MHz or higher or a compatible microprocessor (DOS/V- compatible) If using Windows Vista® or Windows 7 : As recommended for the operating system	
	Memory *2	As recommended for the operating system	
	Hard-disk *2	Software: Approx. 100MB or more Data: 8GB or more *3	
	CD-ROM drive	1 drive (for installing software)	
	LAN	10/100/1000BASE-T ×1	
	USB connector (Type A)	1 connector (for connecting hardware key)	
	Display resolution	800×600 pixels or more	
	Display color	256 colors or more	
Number of licenses (number of computers installed in)		・1 license per 1 client ・Hardware key attached (UBS) (1 unit)	

*1 If virtual measurement points for input or measurement points for E-Energy are included, no zoom specific consumption is displayed.
*2 Note that the required memory and available hard-disk space may vary depending on the system environment.
*3 Shows the capacity required when used with maximum eight subsystems connected.

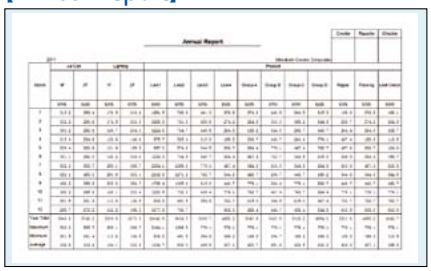
[Daily Report]



[Monthly Report]



[Annual Report]



Safety Precautions

1. Safety Precautions to be Followed at all Times

■Operating Environment/Conditions

Using this product in any of the following environments may cause a malfunction or shorten service life. Do not use in environments where:

- ●Ambient temperature outside the range of 0 - 55˚C
- ●Daily average temperature exceeds 35˚C
- ●Relative humidity outside the range of 5 - 95% or where condensation occurs
- ●Altitude is higher than 2,000m above sea level
- ●Presence of excessive dust, corrosive gas, salt-saturated air or oily smoke
- ●Unit is subject to excessive vibration or physical shock
- ●Unit is exposed to rain or drops of water
- ●Unit is exposed to direct sunlight
- ●Pieces of metal or inductive substances nearby
- ●Presence of strong electromagnetic field or excessive external electrical noise interference

■Installation/Mounting

Be sure to read the user's manual before installing/mounting the product.

⚠CAUTION

- ●For safety, unit installation and all wiring connections should be performed by a qualified electrician.
- ●Be careful of sharp, metal edges; they may cause injury.
- ●When tightening screws or connecting wiring, be sure that small particles or cut pieces of electrical wiring do not get inside the unit.
- ●Check the wiring diagram carefully before making connections. Incorrect connections may cause a malfunction, fire or electrical shock.
- ●Do not perform wiring work using live circuits. Doing so may cause a malfunction, fire or electrical shock.
- ●Use electrical wires of appropriate size. Not doing so may cause a fire due to the possible generation of heat.
- ●Use a solderless terminal that matches the size of the electrical wire. Not doing so may result in disconnected wires or improper electrical contact, thereby causing a malfunction, failure, burnout or fire.

Location	Wire size	Compatible solderless terminal
Power-supply terminal block	0.75 - 2 mm²	RAV1.25-3.5 RAV2-3.5
CC-Link communication terminal block	CC-Link Ver.1.10-compaticable dedicated cable	R1.25-3
Contact output terminal block	0.3 - 0.75 mm²	R1.25-3 (cannot use solderless terminal with sleeve)
Demand monitor block	0.5 - 1.3 mm²	TGV TC-1.25-11T equivalent (Nichifu Co., Ltd.)

- ●Be sure to check that all screws have been tightened. Not doing so may cause a malfunction, failure, burnout or fire.
- ●Tighten screws to the specified torque. Excessive tightening may cause damage to the terminal and/or screws. Failure to tighten properly may cause a malfunction, fire or electrical shock.
- ●When using lines from demand monitor terminal block, twist the heads of the fine lines together so they do not spread before attachment.

Location	Tightening torque
Terminal screws for power-supply terminal block (M3.5 screw)	0.8 - 1.0·Nm
Terminal screws for CC-Link communication terminal block (M3 screw)	0.42 - 0.58N·m
Mounting screws for CC-Link communication terminal block (M3.5 screw)	0.66 - 0.89N·m

Location	Tightening torque
Terminal screws for contact output terminal block (M3 screw)	0.42 - 0.58N·m
Mounting screws for contact output terminal block (M3.5 screw)	0.66 - 0.89N·m
Unit attachment screws (M3×12 screws)	0.36 - 0.48N·m

- ●Be sure to check that the terminal cover has been attached. Not doing so may result in electrical shock.
- ●To prevent induction noise, control wires and communication cables should be installed as far as possible from power lines (wiring should be separated by a distance of at least 100mm).
  Avoid installation inside a panel where high-voltage equipment is used. Use a surge protector for equipment that tends to generate electrical noise.
- ●During actual use conditions, use Class-D grounding (dedicated grounding) for "FG".
- ●Do not connect the FG terminal to a box (ground) when conducting the withstand voltage test or insulation resistance test.

CC-Link

- ●Connect both ends of the CC-Link communication cable shield line to the SLD terminal of each unit.
  Each unit's SLD and FG are connected inside of the modules.
  Please make sure to insulate the shield with vinyl tape or similar.

■Preparations Before Use

- ●Be sure that the installation location complies with the operating environment and conditions.
- ●This product requires setting before use. If setting is not done properly, a malfunction may occur.
- ●Confirm the power-supply rating of the product.
- ●Remove the dust-resistant seal after completing installation and wiring construction.
  Not doing so may cause a malfunction due to the possible generation of heat.
- ●This product is equipped with a lithium battery. As the battery is not connected at the time of shipping, please connect it before use.

■Regarding Use

- ●Use only within rating range specified in the product's instruction manual. Not doing so may cause a malfunction, failure, fire or burnout.
- ●An IP address and other settings are required to connect this product to a network (Ethernet). Before use, use the accompanying setup software to perform network-related settings such as setting the IP address.
- ●The factory default settings are:
  IP address = 192.168.10.1, subnet mask = 255.255.255.0, gateway = none
  No setting changes are required for direct connection to a computer.
- ●This product is equipped with a built-in clock. Before use, use the accompanying setup software to set the current date and time.
- ●Before use, be sure to check that there are no live circuits or bare wires in the vicinity of the product.
  If a live circuit or bare wire is found during use, stop operation immediately and take appropriate measures, such as providing protective insulation.
- ●Please consult with a Mitsubishi Electric sales representative when considering using this product with machinery or systems designed for specialized use such as nuclear power, electric power, aerospace/outer space, medical, or passenger transportation vehicles. (To contact a sales representative, please refer to the end of this document.)
- ●If the power supply is turned on immediately after turning it off (within 5sec), incoming current may exceed the stipulated value (less than 2ms). Please wait more than 5sec before turning the power supply on after turning it off.

⚠CAUTION	●Do not disassemble or modify product. Doing so may cause a failure, electrical shock or fire. ●A seal sheet has been placed on the side of this product. If the seal sheet has been removed from the product, the product is out-of-service, such as down for maintenance or malfunction analysis.

■Maintenance/Inspection

●Do not disassemble or modify any part of the product. Doing so may cause failure, malfunction, injury or fire.
●Do not touch terminals when current is flowing. Doing so may cause electrical shock, malfunction or failure of product operation.
●When cleaning the product or tightening attachment screws, please make sure to turn off the exterior power supply, cutting off power to the input power supply. Not doing so may cause malfunction or failure of product operation.
●Use a soft, dry cloth to wipe dust and dirt from the surface of the product.
●Do not let chemicals touch the surface for long periods of time. Clean product surface using pre-treated wipes. Do not use benzene, thinner or forms of chemical cleansers.
●Conduct inspections as follows to ensure correct use of the product and a long service life.
<Daily inspection or check at least once or twice every six months> Check for: ①Product damage, ②LED display abnormalities, ③Abnormal noises, odors and heat.
<Check once a year> ④ Confirm if mounting screws or terminal block wire connections have come loose (be sure to turn off the power before performing inspections).
●The lithium battery in the server block needs to be replaced when the battery charge is depleted (red BAT LED lamp on server block will turn on) or every three years.

⚠CAUTION	●Be sure to turn off the power before checking for loose connectors, mounting screws and terminal block wire connections. ●If a power outage occurs when the battery charge is weak, the clock or data may be initialized. Please reset when required, and then change the battery.

■Storage

●When storing this product, turn off the power supply, disconnect the wiring and place it in a plastic bag.
●When turning the power supply off for long periods of time, disconnect the connector for the battery.
(The cumulative power outage compensation time of the battery is up to 13,700hr (1.57yr). Using the battery outside of the warranty period may result in losing measurement data.)
●Storing the product in one of the environments described below may cause a malfunction or shorten service life. Do not store the product for long periods of time in environments where:

●Ambient temperature is outside the range of -25 - +75°C	●Unit is subjected to excessive vibration or physical shock.
●Average daily temperature exceeds 35°C	●Unit is exposed to rain or drops of water
●Relative humidity is outside the range of 5 - 95% or where condensation occurs	●Unit is exposed to direct sunlight
●Altitude exceeds 2,000m	●Presence of pieces of metal or inductive substances nearby
●Presence of excessive dust, corrosive gas, salt-saturated air or oily smoke.	●Presence of a strong electromagnetic field or excessive external electrical noise interference.

■Disposal

●Dispose of this product following relevant laws and/or guidelines regarding disposal and cleaning (Waste Management Law).
●This product is equipped with a lithium battery. Please dispose of it according to relevant local laws and/or guidelines.

⚠CAUTION	●The lithium battery may still have an electrical charge after it is removed. Store it separately from other metals, as contact with other metals may cause the generation of heat, rupture or fire.

■QR Code displayed on product

●As the QR Code displayed on this product is used for production management, it is not for the customer to use.
There is no guarantee that the QR Code can be read by a commercial code reader, etc.

■Warranty

●Regarding technical inquiries or questions regarding the product, please contact nearest Mitsubishi Electric dealership or distributor.
●Please consult with a Mitsubishi Electric sales representative when considering using this product with machinery or systems designed for specialized use such as nuclear power, electric power, aerospace/outer space, medical, or passenger transportation vehicles.
●This manual and equipment are shipped under strict quality control and product inspection. In the unlikely in case of any defect resulting from production processes, Mitsubishi Electric will replace the product. Please contact the dealership where the product was purchased. Please note, however, Mitsubishi Electric's warranty doesn't include replacement in the cases of failure and/or damage caused due to natural disasters or improper use.
●Please understand that Mitsubishi Electric will not bear the liability for any system problems caused by a customer or third party, legal issues, failure caused by improper use of or during use of the product, or damage caused by other defects.
●Mitsubishi Electric shall not bear the liability for any damage caused by reasons that are not the fault of the Company, loss of opportunity or loss of income suffered by a customer due to the occurrence of this product's failure, damage or secondary damage resulting from special reasons, regardless of whether or not it was foreseeable, accident compensation or other compensation for any damage caused to products other than those of Mitsubishi Electric, and other services.
●The free warranty period of this product shall be the shorter period, either one (1) year after purchase and delivery to the designated location, or 18 months after shipping from the Company factory (beginning from month and year manufactured).
However, even during the warranty period, if repair is required due to one of the following causes, a fee shall be charged:
1) improper use or 2) improper operation.
Fee-based repairs are available after the end of the free warranty period.
●The free warranty period for repairs shall not be renewed.

■Repairs at the time of failure/abnormality

●If any abnormity occurs in one of the products listed in this catalog, please read the section, "Trouble Shooting," in the instruction manual (operation version) to check for possible reasons of the problem. If there is no description matching the problem found, please contact nearest Mitsubishi Electric dealership.

2. Precautions for Use

■Precautions Regarding Software Use

●Mitsubishi Electric does not guarantee or provide support for FTP server or SMTP server operations. Additionally, Mitsubishi Electric does not provide technical support for individual servers.
●Please be aware that Mitsubishi Electric does not provide network support. Please contact your network administrator.
●Please be aware that Mitsubishi Electric does not provide support regarding computer hardware, operating systems or operations. Please contact the manufacturer or administrator.
●After using the setup software to modify display settings (e.g., a measuring point name), be sure to close and restart the web browser.
Not doing so may cause the changes not to take effect due to the web browser's caching function.

⚠CAUTION
●For monitoring operating status, do not use measures such as inputting alarms that consider human safety or require an emergency response (fire alarm). Doing so may lead to an accident.

3. Trademarks

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●Ethernet is a trademark of Xerox Corporation in the U.S.A.
●QR Code is a registered trademark of Denso Wave Incorporated in Japan.
●EcoServer is a registered trademark of Mitsubishi Electric Corporation.
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Mitsubishi Electric Energy-saving Data Collection Server EcoWebServer Ⅲ

Service Network

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For Safety : Please read the instruction manual carefully before using the products in this catalog. Wiring and connection must be done by the person who has specialized knowledge of electric construction and wirings.

●Trademarks

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eco Changes **for a greener tomorrow**

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

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